

CLAIMS

What is claimed is:

1. An annular unitizing element comprising; a rotor engaging member, a stator engaging member, and a rear member;
wherein the radially outer surface of the unitizing element comprises two areas of differing diameter, one corresponding to the rotor engaging member and the other corresponding to the rear member; and
wherein the stator engaging member extends radially inward from the radially inner side of the annular unitizing element.
2. The unitizing element of claim 1 wherein the juncture between the two areas of differing diameter is substantially perpendicular to the axis of rotation.
3. The unitizing element of claim 1, wherein the stator engaging member extends from about the axial midpoint of the unitizing element.
4. The unitizing element of claim 1, wherein the unitizing element comprises a fluorinated polymer or resin.
5. The unitizing element of claim 1, wherein the unitizing element comprises filled polytetrafluoroethylene.
6. A sealing assembly for sealing a rotating shaft and a bearing housing comprising:
a rotor comprising:
an annular engagement flange extending in an axial direction comprising a groove on a radial side thereof;
a stator comprising:

an annular engagement flange extending in an axial direction comprising a groove on a radial side thereof; and an annular unitizing element comprising:

- a stator engaging member;
- a rotor engaging member; and
- a rear member;

wherein the rotor engaging member engages the rotor groove; and, wherein the stator engaging member extends from the unitizing element in a radial direction to engage the stator groove.

7. The sealing assembly of claim 6, wherein the rotor groove and stator groove are at least partially axially aligned forming a void therebetween;

8. The sealing assembly of claim 7, wherein the unitizing element is retained at least partially within the void formed by the at least partial alignment of the rotor groove and the stator groove.

9. The sealing assembly of claim 6, wherein the unitizing element further comprises two adjoining areas of differing diameter, one area corresponding to the rotor engagement member and the other corresponding to the rear member.

10. The unitizing element of claim 9, wherein the juncture between the two areas of differing diameter comprises a wall portion.

11. The sealing assembly of claim 10, wherein the unitizing element prevents separation of the rotor and stator in the event of axial movement by engaging a wall of the stator groove with the stator engaging member and engaging a wall of the rotor groove with the wall portion connecting the areas of differing diameter of the unitizing element.

12. The sealing assembly of claim 11, wherein the wall portion of the unitizing element is substantially perpendicular to the axis of rotation.
13. The sealing assembly of claim 6, wherein the unitizing element prevents contact between the rotor and stator by engaging the outer wall of the stator and the inner wall of the rotor in the event of axially movement of the rotor toward the stator.
14. The sealing assembly of claim 6, wherein the unitizing element comprises a fluorinated polymer or resin.
15. The sealing assembly of claim 6, wherein the unitizing element comprises a lubricious plastic material.
16. The sealing assembly of claim 6, wherein the unitizing element comprises filled polytetrafluoroethylene.
17. The sealing assembly of claim 6, wherein the stator further comprises a drainage port on the interior side of the seal, wherein lubricant is allowed to drain from the seal back into the bearing housing.
18. The sealing assembly of claim 6, wherein the stator further comprises an expulsion port on the atmospheric side of the seal, wherein contaminants may be expelled from the seal.
19. The sealing assembly of claim 6, wherein the stator further comprises an O-ring to sealingly engage the stator to a bearing housing, said O-ring residing within a groove formed in the radially outer circumference of the stator, said groove comprising a inner surface wherein one end of the inner surface is less deep than the opposing end of the inner surface to provide a locking mechanism to prevent movement of the stator in a direction away from the bearing housing.

20. The sealing assembly of claim 6, wherein the rotor further comprises an O-ring to sealingly engage the rotor to a shaft, said O-ring residing within a groove formed in the radially inner circumference of the rotor, said groove comprising a inner surface wherein one end of the inner surface is less deep than the opposing end of the inner surface to provide a locking mechanism to prevent movement of the rotor in a direction away from the bearing housing.

21. A method for assembling a sealing assembly for sealing a rotating shaft and a bearing housing comprising:

- providing a rotor comprising:
 - an annular engagement flange extending in an axial direction
 - comprising a groove on a radial side thereof;
 - providing a unitizing element comprising a stator engaging member, a rotor engaging member, a void comprising the area between the stator engaging member and the rotor engaging member, and a rear member;
 - engaging the unitizing element with the rotor such that the rotor engaging member of the unitizing element is retained within the groove on the rotor annul engagement flange;
 - providing a stator comprising an annular engagement flange extending in an axial direction comprising a groove on a radial side thereof; and
 - engaging the rotor and unitizing element with the stator such that the stator engaging member deflects onto the void until the unitizing element is in position, then the stator engaging member extends into the area of the stator groove.

22. The method of claim 21 wherein the unitizing element further comprises filled polytetrafluoroethylene.

23. The method of claim 21 wherein the rotor groove and stator groove are at least partially axially aligned forming a void therebetween, and the unitizing element resides within said void.